

Amendments to Specification

Please replace the paragraph bridging lines 25 – 28 on page 2 with the following paragraph:

The object of at least one aspect of the present invention is to provide a perforated plate, or a chuck incorporating such a plate, for use in a wafer-handling operation. The object of at least one aspect of the present invention is to carry a wafer in a wafer-handling chuck with an improved reliability.

Please replace the paragraph bridging lines 30 – 31 on page 2 and lines 1 – 2 on page 3 with the following paragraph:

In broad terms, a first aspect of the invention may be said to be a perforated plate having a pair of opposite substantially planar faces and a plurality of through holes extending between the faces, wherein a first one of the faces has a plurality of grooves each of which interconnect a respective pair of the through holes.

Please replace the paragraph bridging lines 10 – 14 on page 3 with the following paragraph:

Preferably, one or more of the grooves extends diametrically across the central zone to interconnect a respective pair of the through holes, two or more of the through holes lie on a common radius extending from the central zone with **[[the or]]** each pair of adjacent through holes lying on the common radius being interconnected by a respective groove.

Please replace the paragraph bridging lines 18 – 20 on page 3 with the following paragraph:

Preferably, at least one of the through holes does not lie on a radius in common with other through holes but is interconnected by a respective pair of the grooves to the two closest radially inward through holes.

Please replace the paragraph bridging lines 1 – 3 on page 4 with the following paragraph:

Preferably, the grooves are pressure-~~[[equalising]]~~ equalizing passages interconnecting respective pairs of the through holes and the grooves allow flow of fluid to substantially ~~[[equalise]]~~ equalize fluid pressure in the through holes.

Please replace the paragraph bridging lines 5 – 17 on page 4 with the following paragraph:

In broad terms, a first aspect of the invention may be said to be an apparatus for acquiring, holding and releasing an article having a planar surface, the apparatus including at least a carrier assembly having a chamber, a resilient membrane which closes one side of the chamber, and the perforated plate of the first aspect, wherein the perforated plate is located in the chamber with the second face facing the inner face of the membrane, the plate is arranged for limited movement substantially perpendicular to the second face of the plate between a first configuration, in which the second face of the plate is substantially in contact with the inner face of the membrane, and a second configuration, in which the first face of the plate is substantially in contact with a planar inner wall of the chamber, said inner chamber wall has an orifice by which a fluid pressure lower than that external to the chamber may be selectively applied to the chamber, and the orifice in the inner chamber wall is in at least indirect fluid pressure

communication with the grooves and through holes in the perforated plate when the plate is in the second configuration.

Please replace the paragraph bridging line 31 on page 4 with the following paragraph:

Preferably, the article is a semiconductor wafer.

Please replace the paragraph bridging lines 11 – 27 on page 5 with the following paragraph:

It will be appreciated that a wafer-handling chuck may be implemented in various forms. Preferred embodiments of the invention will now be described, by way of example only and without intending to be limited, with reference to the accompanying drawings of which:

Figure 1 shows a plan view of a perforated plate according to one aspect of the current invention.

Figure 2 shows a plan view of a perforated plate of a prior art wafer chuck.

Figure 3 shows a cross-sectional side view of a wafer chuck according to a second aspect of the current invention,

Figure 4 shows a cross-sectional side view of the wafer chuck of Figure 3, about to acquire a wafer,

Figure 5 shows a cross-sectional side view of the wafer chuck of Figures 3 and 4, during a first wafer acquisition stage,

Figure 6 shows a cross-sectional side view of the wafer chuck of Figures 3 to 5, during a second wafer acquisition stage, and

Figure 7 shows a cross-sectional side view of the wafer chuck of Figures 4 to 6, during release of a wafer.

Please replace the paragraph bridging lines 31 – 32 on page 5 and lines 1 – 5 on page 6 with the following paragraph:

Figure 1 shows a plan view of a circular perforated plate 1 according to the current invention. A first face 2 of the plate, i.e. the face shown in Figure 1, has a thickened peripheral edge rim 3, but is otherwise ~~[[is]]~~ planar. The second, opposite face, i.e. the face not seen in Figure 1, is planar. The rim contributes to the rigidity of the plate and assists in maintaining the planarity of the opposite faces of the plate. The opposite faces of the plate are parallel. The plate has a pattern of holes 4 which extend through the plate between the opposite faces.

Please replace the paragraph bridging lines 13 – 16 on page 6 with the following paragraph:

The through holes are conveniently located on a series of concentric circles. In the example shown in Figure 1, there are thirty-six holes on three concentric circles. There are six holes on the innermost circle, twelve holes on the intermediate circle, and eighteen holes on the outermost circle.

Please replace the paragraph bridging lines 21 – 23 on page 6 with the following paragraph:

Three grooves 6, which are respectively aligned with pairs of the six radii, extend diametrically across ~~[[centre]]~~ **a center** of the plate to interconnect respective pairs of the six holes lying oppositely on the innermost circle.

Please replace the paragraph bridging lines 6 – 7 on page 7 with the following paragraph:

A blind hole 12 may be provided at the ~~[[centre]]~~ **center** of the first face of the perforated plate, at the intersection of the three diametrical grooves 6.

Please replace the paragraph bridging lines 12 – 16 on page 7 with the following paragraph:

Other arrangements of holes and grooves are possible. In a preferable general arrangement, respective grooves radiate from a common **[[centre]] center** to a radially-innermost through holes, radial grooves interconnect radially-aligned through holes, and a pair of grooves interconnect each radially-outward through hole that is not radially aligned with another through hole to the closest pair of radially-inward through holes.

Please replace the paragraph bridging lines 24 – 28 on page 7 with the following paragraph:

The grooves provided in the perforated plate 1 of Figure 1 provide passages by which a vacuum applied at the **[[centre]] center** of the first face 2 of the plate can communicate with every through hole 4, even when the first face of the plate lies in close face-to-face contact with another planar surface. This may be better appreciated from the following explanation of a preferred application of the perforated plate.

Please replace the paragraph bridging lines 30 – 32 on page 7 and lines 1 – 3 on page 8 with the following paragraph:

In the following description, various features are referred to by orientation; for example, by terms such as “underside”, “upper face”, “upper surface”, “upward facing surface”, and “downwardly”. These and similar references are given to aid in the understanding of the invention when in the orientation shown in the side views of Figures 3 to 7. Although the invention may be conveniently used in this orientation, the invention is not limited to the particular orientation as discussed and shown in the figures.

Please replace the paragraph bridging lines 20 – 25 on paragraph 9 with the following paragraph:

Figure 5 also shows the chuck 16 with a vacuum applied to the chamber 23 via the axial supply passage 27 through the gimbaled plate 17. The applied vacuum draws portions of the membrane 22 up into the through holes 4 in the perforated plate 1 to form ~~[[localized]]~~ localized suction cups 31 which draw the wafer 30 into close contact with the generally flat remainder of the membrane 22. This draws the membrane into close contact with the perforated plate.

Please delete the paragraph bridging lines 19 – 23 on page 11.

Please delete page 12.